Permit Fact Sheet

General Information

Permit Number:	WI-0021237-09-0	
Permittee Name:	Village of Bowler	
Address:	107 W. Main St. P O Box 68	
City/State/Zip:	Bowler WI 54416	
Discharge Location:	N 1/2 of the NW 1/4, Section 6, T 27 N, R 13 E, Town of Seneca	
Receiving Water:	North branch of the Embarrass River	
StreamFlow ($Q_{7,10}$):	6 cfs	
Stream Classification:	Cold water, non-public water supply.	
Design Flow	Annual Average	0.0336 MGD
Significant Industrial Loading?	No	
Operator at Proper Grade?	Yes	
Approved Pretreatment Program?	NA	

Facility Description

The Bowler wastewater treatment plant treats domestic wastes generated within the village. The single largest user is the K-12 public school. Treatment consists of two aerated lagoons in series with a surface water discharge to the North Branch of the Embarrass River. Aeration is provided using 19 medium bubble diffuser plates, 14 in the first lagoon and five in the second. Lagoon effluent is pH adjusted (as needed) using sulfuric acid to meet daily maximum ammonia limitations. Lagoon effluent is also seasonally disinfected using ultraviolet radiation. The system was designed to treat an average flow of 0.0336 MGD and BOD_5 loading of 133 #/day. The system was originally constructed in 1971 with upgrades in 1987 and 2012.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
701	Flow 0.020 MGD; BOD 255 mg/L; TSS 213 mg/L (All 2017-2019 data)	Influent samples shall be collected from the influent manhole.
001	Flow 0.026 MGD; BOD 5.2 mg/L; TSS 2.7 mg/L; Phosphorus 5.8 mg/L (All 2017-2019 data except phosphorus is 2018 only)	Effluent samples shall be collected at the effluent control structure.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
003	688 dry US tons/year (per application)	Liquid sludge that accumulates in the lagoons.

1 Influent - Proposed Monitoring

Sample Point Number: 701- Influent

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	Weekly	24-Hr Flow Prop Comp	

Changes from Previous Permit:

None

Explanation of Limits and Monitoring Requirements

BOD_5 and Total Suspended Solids: Tracking of BOD_5 and Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in subsection 5.4.6 of the permit.

2 Surface Water - Proposed Monitoring and Limitations

Sample Point Number: 001- Effluent

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Weekly Avg	45 mg/L	Weekly	Grab	
BOD5, Total	Monthly Avg	30 mg/L	Weekly	Grab	
Suspended Solids, Total	Weekly Avg	45 mg/L	Weekly	Grab	
Suspended Solids, Total	Monthly Avg	30 mg/L	Weekly	Grab	
pH Field	Daily Min	6.0 su	2/Week	Grab	See section 2.2.1.2.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
pH Field	Daily Max	9.0 su	2/Week	Grab	See section 2.2.1.2.
Fecal Coliform	Geometric Mean - Wkly	656 #/100 ml	Weekly	Grab	Effective May - September.
Fecal Coliform	Geometric Mean - Monthly	400 #/100 ml	Weekly	Grab	Effective May - September.
Nitrogen, Ammonia Variable Limit		mg/L	Weekly	Grab	Using the daily effluent pH result, look up the daily maximum variable ammonia limit from the pH dependent table at subsection 2.2.1.2. Report the variable limit in the Nitrogen, Ammonia Variable Limit column of the eDMR.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	Weekly	Grab	See section 2.2.1.2
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	108 mg/L	Weekly	Grab	
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	108 mg/L	Weekly	Grab	
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section below.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section below.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring section below.
Phosphorus, Total		mg/L	2/Month	Grab	Monitoring required in 2023.
Phosphorus, Total		lbs/day	2/Month	Calculated	Calculate the daily mass discharge of phosphorus in lbs/day on the same days phosphorus sampling occurs. Mass discharge = concentration (mg/L) x daily flow (MGD) x 8.34.

Changes from Previous Permit

Fecal Coliform: A weekly geometric mean limit of 656#/100mL was added for May through September.

Ammonia Nitrogen: Weekly and monthly limits were added.

Total Nitrogen Monitoring (NO2+NO3, TKN and Total N): Annual monitoring in rotating quarters required.

Phosphorus: A calculated mass discharge reporting requirement was added.

Acute WET testing: No longer required.

Explanation of Limits and Monitoring Requirements

Categorical Limits

BOD_5, Total Suspended Solids, pH, and Dissolved Oxygen: Standard municipal wastewater requirements for BOD_5, total suspended solids, dissolved oxygen, and pH are included based on ch. NR 210, Wis. Adm. Code, 'Sewage Treatment Works' requirements for discharges to fish and aquatic life streams. Chapter NR 102 Wis. Adm. Code 'Water Quality Standards for Surface Waters' also specifies requirements for pH for fish and aquatic life streams.

Regulatory changes to s. NR 205.065, Wis. Adm. Code became effective September 1, 2016 and require limits in this permit to be expressed as weekly average and monthly average limits whenever practicable. These changes are based on 40 CFR 122.45(d).

Water Quality Based Limits and WET Requirements and Disinfection (if applicable)

Refer to the WQBEL memo for the detailed calculations, prepared by the Water Quality Bureau dated 9/18/2019 used for this reissuance.

Fecal Coliform: Weekly geometric mean limit of 656#/100 mL to the proposed permit as part of changes to the procedures in ch. NR 106, Wis. Adm. Code.

Total Ammonia Nitrogen (NH3-N)- Acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code. Subchapter III of ch. NR 106 establishes the procedure for calculating WQBELs for ammonia. A weekly average limit and monthly average limit of 108 mg/L is recommended for this permit.

Total Nitrogen Monitoring (NO2+NO3, TKN and Total N): Based on the "Guidance for Total Nitrogen Monitoring in Wastewater Permits" dated October 1, 2019, annual effluent monitoring for Total Nitrogen is required for all minor municipal dischargers. Annual tests are scheduled in the following rotating quarters: **October – December 2020, April – June 2021, January – March 2022, July – September 2023, April – June 2024.**

Phosphorus: Phosphorus requirements are based on the Phosphorus Rule that became effective 12/1/2010 as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. The code categorically limits municipal dischargers of more than 150 pounds of phosphorus per month to 1.0 mg/L unless an alternative limit is approved. WQBELs for phosphorus are needed whenever the discharge contains phosphorus at concentrations or loadings that will cause or contribute to an exceedance of the water quality standards.

Since the reported effluent total phosphorus data is far below the calculated WQBEL, the discharger does not have reasonable potential to cause or contribute to an exceedance of water quality criterion therefore a WQBEL is not recommended.

A requirement to report calculated phosphorus mass discharge was added to the permit in anticipation of the TMDL allocation for phosphorus that is currently under development.

TMDL Under Development: There is an effort underway to improve water quality in the Upper Fox and Wolf River Basin. The framework for this effort is a Total Maximum Daily Load (TMDL), which is the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. The Upper Fox and Wolf River TMDL

project area includes portions of the Embarrass River. The TMDL will set phosphorus and TSS wasteload allocations (WLAs) for dischargers throughout the project area. WLA-derived limits must be included in WPDES permits once the TMDL has been approved by USEPA, which may result in limits different than those calculated in the WQBEL memo used for this reissuance. TMDL-based limits may be included in lieu of or in addition to the calculated limits upon permit reissuance or modification, according to s. NR 217.16, Wis. Adm. Code. For more information see the Department's web site https://dnr.wi.gov/topic/TMDLs/FoxWolf/.

WET testing: Acute WET testing no longer required. Requirements are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised in August 2016. See current version of the WET Program Guidance Document, checklist, and WET information, guidance and test methods at **http://dnr.wi.gov/topic/wastewater/wet.html**.

3 Land Application - Proposed Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
003	Neither	Liquid	Not required	Not required	Lagoon	688
Does sludge management demonstrate compliance? **Yes**						
Is additional sludge storage required? **No**						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? **No** If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility						
Is a priority pollutant scan required? **No** Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

Sample Point Number: 003- Lagoon Sludge

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Arsenic Dry Wt	High Quality	41 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Arsenic Dry Wt	Ceiling	75 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Cadmium Dry Wt	High Quality	39 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					sludge is land applied.
Cadmium Dry Wt	Ceiling	85 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Copper Dry Wt	High Quality	1,500 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Copper Dry Wt	Ceiling	4,300 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Lead Dry Wt	High Quality	300 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Lead Dry Wt	Ceiling	840 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Mercury Dry Wt	High Quality	17 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Mercury Dry Wt	Ceiling	57 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Molybdenum Dry Wt	Ceiling	75 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Nickel Dry Wt	Ceiling	420 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					sludge is land applied.
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	Monitoring required in 2021. Limits apply when sludge is land applied.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Monitoring required in 2021. See sections 3.2.1.1. and 4.5.6 for monitoring requirements.
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Monitoring required in 2021. See sections 3.2.1.1. and 4.5.6 for monitoring requirements.

Changes from Previous Permit:

None

Explanation of Limits and Monitoring Requirements

Requirements for municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high-quality limits for metals in sludge are specified in s. NR 204.07(5). Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07(7) for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k).

Special Reporting Requirements

None

Other Comments:

None

Attachments:

Substantial Compliance Determination, completed 8/9/19 by Roy Van Gheem, DNR Compliance Engineer

Water Quality Based Effluent Limits dated 9/18/19, prepared by Shaun Shields, DNR Limit Calculator

Public Notice

Proposed Expiration Date:

December 31, 2024

Justification Of Any Waivers From Permit Application Requirements

No waivers

Prepared By:

Lisa Lumley Wastewater Specialist, Department of Natural Resources

Date: October 8, 2019